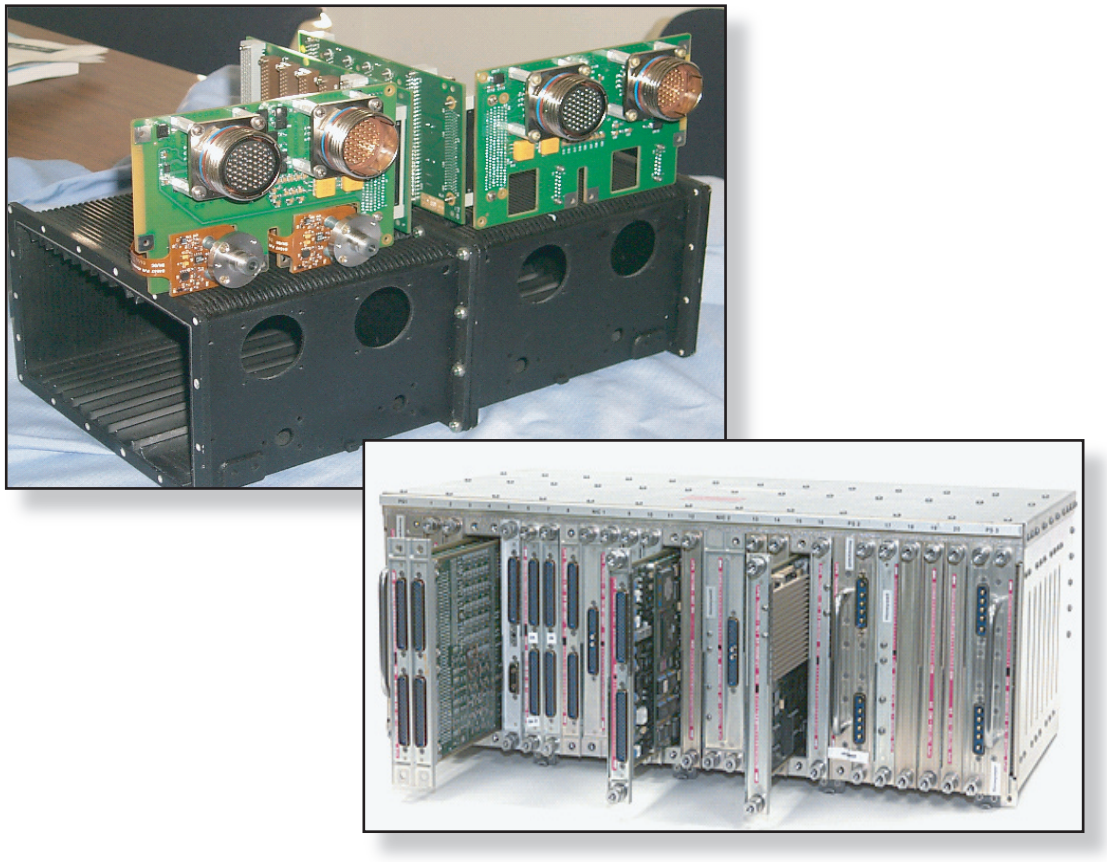
Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

ADVANCEMENT IN TURBINE ENGINE CONTROLLER TECHNOLOGY



The AFRL Propulsion Directorate, in collaboration with Honeywell Corporation, designed a new fault-tolerant modular electronic engine control. This advancement in turbine engine electronic controllers will provide AFRL researchers with increased capability to implement and test control modes and develop engine fleet upgrades.

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Accomplishment

AFRL's newly designed electronic engine control unit, the Modular Aerospace Controller (MAC), provides engine control researchers with the capability to simulate closed-loop performance of modern turbine engine control systems. This capability greatly simplifies the complex interfacing tasks normally associated with testing and implementing new control modes.

The MAC is capable of providing both engine control and diagnostic functions. These features will allow researchers at the AFRL's Intelligent Controls Facility at Wright-Patterson Air Force Base, Ohio, to study advanced engine control systems and health management technologies, while concurrently developing and testing new controller algorithms for upgrading fielded military engine control systems.

The MAC software programs were designed to run in a real-time operating system environment, enabling partitioning and distributed processing between modules. A unique MAC feature provides the capability to separate application and operating system software, allowing integration and use of new vendor software developments. This was not previously possible with state-of-the-art (SOA) systems.

Background

The AFRL-Honeywell MAC program was an emerging technology effort guided by the objective to develop engine control technology to advance SOA full-authority, digital engine controller systems. A primary goal of this effort was to employ common processing modules rather than dedicated circuit functions.

Propulsion
Emerging Technologies

Additional Information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (04-PR-30)